Vol. 1. No. 9. April 28, 1904

THE JOURNAL OF PHILOSOPHY
PSYCHOLOGY AND SCIENTIFIC METHODS

A SUGGESTION TOWARD A REINTERPRETATION OF INTROSPECTION

CHANGES in general standpoint must always be followed at a considerable distance by changes in particular applications. This is especially true just at present in psychology. Even within the last decade it seems that the generally accepted standpoint in psychology has been changing from a dualism to a qualified monism. While ten years or so ago the majority of psychologists would have begun their analyses with the assumption that mind and body were two distinct entities which could be immediately known as distinct, it is probable that a statistical count would show that the greater number now accept as their starting point an experience which in itself is neither subjective nor objective. It is no longer generally asserted that there is a great gulf fixed between the mental and physical, subjective and objective, but the distinction is drawn as by Wundt in the difference of attitude that is taken toward the common experience, or the difference is made to lie, as for Külpe, in the way in which the two groups of phenomena are excited, with a slight corresponding difference in the qualities of the two processes.

Among the topics which have been largely unaffected by the changes in the general standpoint is introspection. It is still frequently treated from the older standpoint, and it would seem that its important place among psychological methods would make it worth while to attempt to reinterpret the generally accepted facts from the position of the newer theories. From the newer conception we can no longer dismiss introspection with the statement that it is the peculiar method of psychology, or be satisfied with the statement that it is by introspection alone we can turn our gaze inward upon the mental states with which psychology deals. The philosophers of experience regard both mental fact and physical fact as parts of the single datum, so that whatever observation goes on must be directed toward the same general kind of material in the same place, so far as spatial terms can be applied to the common

experience at all. And we can not regard introspection as the process of watching the mind at work from some standpoint still more removed from the external world than the mind itself. For if from the doctrine of experience the known and the knower coincide, it is still truer that the knower and the knower of the knower must be identical.

A careful observation of the actual processes involved in introspection convinces the writer that what does distinguish it from observation is simply the attitude of mind at the time the two processes run their course. To repeat Wundt's statement, when introspecting we regard the given mental processes subjectively; when observing we regard them as objective. When we regard a given experience objectively, the question in mind, expressed or implied, is as to what the object may be in itself or in relation to other objects. When we introspect, on the contrary, we ask what the experience means to us and what its relations may be to other mental processes. Exactly the same experience may, and usually does, furnish the starting point for both. If, for example, we are attracted by a distant light, we are observing so long as the problem that concerns us is the nature of the light, whether a lighthouse, a moving boat, an anchor light or a lamp in some cottage on an island. In making this determination there must come up certain definite associations that complete the bare sensation and make it take on a definite form. What associations shall come up, what the light shall mean for us, depends upon what the present mood of the observer may be, upon his knowledge of his surroundings and of his earlier experiences in general. With changing mood and growing knowledge the interpretation will change, but observation under the same condition, external and mental, always results in the same perception. To regard this same experience subjectively means to observe the first completed perception in very much the same way that the sensation was observed, and with almost identical results. As you introspect you have in mind a query as to how the perception was constituted, as to why that particular mood was present and why you saw the light as on shore rather than on sea, or why you were attracted by this particular light rather than another—in short, to work out concretely and in detail the factors that we have hinted at in the preceding sentences. With this problem in mind there must group about the perception new associations, other comparisons must be made, and the nature of this completion again will depend largely upon the problem the introspector has in mind and upon his general knowledge. In both processes the general laws are identical, and the elements involved may be very much the same. The original stimulus that occasioned the perception may still be acting, and

the associates that were called up during observation persist for the most part during the introspection. So far as the structural elements are concerned, the only difference lies in the presence of a few new associates. Functionally the difference lies merely in the mental dispositions, in the difference in the problems which are pressing forward for an answer.

The difference between the psychical dispositions of introspection and observation may be no greater than in the observation of facts from the standpoints of two objective sciences, or between the mental attitudes that are dominant in the consideration of different psychological problems. When, for instance, the biologist and the chemist regard the vital phenomena manifested by the lower animal forms, the one sees in them nothing but attraction and repulsion of ions, the other only tropisms, taxes and instincts. Both the mental attitude and the resulting interpretation are as different as in our illustration was the light as physical emanation and the perception as mass of associations. On the psychological side Professor Külpe has well illustrated the difference in his experiment on attending with two questions in mind. When, it will be remembered, the subject was asked to look at a mass of letters exposed for a brief instant and say how many letters there were, he could answer with fair accuracy, but could say very little as to what letters were exposed; but when he had been asked to say what letters there were he could answer that question, but could only say how many there were after counting in memory. It is this same difference in mental attitude, of the problem in mind, that distinguishes observation and introspection.

A solution of the question as to whether introspection may go on side by side with observation and of the validity of introspection follows from an acceptance of the interpretation of the nature of introspection. The first problem must be decided against Spiller and in harmony with the traditional belief. You can no more introspect at the same time you observe than you can look at an animal at one and the same instant as a chemist and a biologist, or at a man as friend and as physician. One point of view necessarily excludes the other if the two involve the answer to two different questions. To go back to our illustration, you can not ask what the light is and why you are interested at the same time. If you could ask why you are interested or how you know what light it is, you could learn nothing of the light itself. This again is not without its analogue in physical observation. An astronomer can not be busy wondering what correction in longitude his observation is likely to bring about as he takes his transit. If he falls into this attitude his observation is very likely to be at fault. In all scientific work the same law holds. You must first be completely attentive to the observation, to

the acquirement of data, and only concern yourself with its meaning or interpretation after the first observation is complete. The same material is involved in the observation as in its interpretation, but the attitude of mind is different in each case. This, then, it seems to the writer, is all that can be meant when we say that it is impossible to introspect a process during its course. You can not have two attitudes toward the same fact at once. In so far the traditional statement is true, and when Spiller and others assert the contrary they are both at fault in their observation, and forget the facts concerning the distribution of the attention.

That the identification of introspection and retrospection necessarily invalidates introspection, as Spiller argues, does not in the least follow. The interval that must elapse between observation and introspection is not sufficiently great to permit the process to undergo any change; in fact, experiments prove that the lapse of a short interval renders our knowledge more rather than less adequate. Again, if it is argued that the additions which are made to the mental process in introspecting distort it, it is only necessary to answer that the associations which are added in the observation of any physical object would also similarly distort that. If introspection is to be discarded on this ground, so also must observation, and we are left with absolute scepticism. The only way we can know is by an interpretation, and that consists largely in the addition to the mental process or sensation of associations, in comparing it with other processes, in bringing it into connection with knowledge as a whole. All this does not interfere with the fact that you have had the perception or bit of reasoning for itself, nor does it destroy the truth of the mental fact, any more than it prevents the perception itself from being accepted as true because there must always be additions to the immediate sensations. You have your choice of knowing a process psychologically, of knowing it physically and of not knowing it at all, but if you are to know it there must be something added in the process; there is no escape from this but ignorance. It is useless to argue that knowing is a distortion, for the perception does not exist until known, the distortion is a part of the existence of the mental state as known psychologically, just as the physical interpretation is a part of the object as we know it physically.

It would seem, then, that introspection differs from observation only in the attitude of mind as we examine the mental process, that we can not introspect a process during its passage merely because we can not have two different attitudes of mind at once, and that there is no more reason to assume that the results of this post-mortem examination are erroneous than to assume that all observation is misleading.

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RECOGNITION AND RECALL

THE influence of a perceptual stimulus in facilitating the process of imaginative reproduction is matter of common observation. It is often of great practical importance, since an act of recall which completely failed when approached through central association may thus be effectively aroused and carried through. The name which can not, by the greatest racking of memory, be brought back to consciousness is thus uttered spontaneously and without hesitation when the bearer is again met face to face. The same name, when it has thus escaped memory, may be instantly recognized and identified with certainty the moment it is uttered by another. So pronounced is the independence of these two processes that there may be habitual recognition of classes of impressions which are apparently irrecoverable as mental images in the type of mind to which a given individual belongs. One who is incapable of calling up any distinct visual imagery recognizes without hesitation the objects and persons of his surroundings; one who can not carry a single tune in his head need have no difficulty in identifying an air when it is heard again.

The supplemental processes through which any element of a previous content of consciousness is appropriated and identified may be aroused through either central or peripheral connections. Stimulation of the latter type is, of course, much more likely to be effective than that of the former. When one has failed to recall a given fact even after all the remembered associations have been passed in review as possible cues, the desired connections are likely to shoot home if some element of the original situation is actually re-presented instead of merely reviewed in imagination. The sight of the common friend who made the introduction may help one to a name which resisted recall even when the personality of the introducer was invoked in memory to aid the process. The occurrence of an associate of a given conscious context in the form of an original sense presentation so far surpasses the efficiency of voluntary imaginative recall in breaking down the inner resistance which exists in such cases as to place it in a separate class from the latter.

The general nature of the supplemental process may, for our purpose, be regarded as the same in the two cases. In both the sense of familiarity is aroused in connection with the conscious content in question; its appropriation may take place with equal sense of security in the two instances; and its identification consists always in the establishment of certain thought-of connections which give it a definite place in the web of past experience. But the arousal of these processes takes place in very different ways in the two cases, and it

may become a matter of importance to determine quantitatively the efficiency of the two forms of stimulus, central and peripheral, in giving rise to those associated activities upon which these mental functions depend. To this end the writer had made under his direction a series of observations concerning the relations of recall and recognition which were carried on during some four weeks, but the results of which can be regarded merely as a preliminary report having no final value so far as its quantitative features are concerned. The record, nevertheless, seems justified as a suggestion concerning, and contribution towards, any more systematic investigation of the matter which may elsewhere be undertaken.

The experiment consisted in the presentation of a series of ten words, as many as possible of which the observer was afterwards called upon to reproduce through voluntary recall, in the one case; or, in the other, to identify when re-presented as part of a larger group. Two observers took part in the investigation. The materials were presented in two forms, first as a visual and second as an auditory content. In the former case ten monosyllabic words were simultaneously exposed for a period of ten seconds, after which the observer wrote down all he could recall of the series within a minute's time. For the recognition test, after a similar exposure the ten words were mixed with an equal number of other monosyllables and the whole group was then presented to the observer, who indicated all those which he could satisfactorily identify as having formed part of the original series. On account of the time involved in this second arrangement of material twenty seconds were uniformly allowed to elapse between the close of the first presentation and the beginning of the process of recall or identification. In the auditory series ten words were read out at the rate of one a second, and reproduced as before in the case of recall, or identified in a series of twenty which included the original ten and was read aloud slowly by the conductor of the experiment.

An obvious comment upon the conditions of experimentation as thus described concerns the apparent disparity of alternatives in the two cases of recall and recognition respectively, and the influence of this factor upon the results. In the former case the series of possible choices is limited only by the whole number of monosyllabic words which might occur to the mind of the observer within the given time, and is therefore indefinitely great. In the latter case, on the other hand, it is known from the outset that the entire series of ten words is comprised within a total group of twenty; in consequence of which fifty per cent. of correct judgments are in the long run to be expected even when the selections are determined by chance. It might appear, therefore, that in interpreting the latter results the

presence of a large constant error due to this factor must be taken into account. Such would be the case if the observer were required each time to select ten words out of the given twenty; it would, indeed, be necessary to consider it if he were found habitually or frequently completing a series of ten in his identifications. But not only was the subject not required to select ten words under these conditions; he was also cautioned to indicate only those words of which his identification was reasonably certain. He knew, to be sure, that somewhere within the group of twenty words the whole original series was to be found, but as the problem in the case of each word as it came under consideration was the simple one whether or not it could be recognized as part of the original series, this knowledge would affect his judgment at most only as an obscure disposition to cast the benefit of doubt in favor of, rather than against, identification. The observers themselves were unaware of the presence of this prejudicial element in their judgments, and it is safe to say that the percentages here given represent with reasonable accuracy the proportion of actual identifications in recognition as well as in recall.

The results of the tests can be stated in a few words. Those in the visual series are given in the first table below; those in the auditory follow in the second. All the quantities are in terms of percentages of correct judgments, and represent the average of the series of individual tests.

TABLE I.

Observer.	Recall.	Recognition.
A	54.3 per cent.	69.7 per cent.
B	59.5	84.3
Average	56.9	77.0

TABLE II.

Observe	Recall.	Recognition.
A	50.0 per cent.	74.0 per cent.
B	57.0	74.3
Average	53.5	74.15

The individual observers present different levels of accomplishment, *B* making the higher, *A* the lower, percentage throughout the whole series of variations. The average number of correct judgments is greater in the visual series in both recall and recognition. The difference in the number of correct judgments made in recall and recognition respectively, all cases included, is 20.37 per cent., an average which is composed of two practically identical constituents, namely, 20.1 per cent. in the visual, and 20.65 per cent. in the auditory series. Roughly, then, where a little over one half the orig-

inal matter was reproduced through voluntary recall, three quarters were recognized when represented as part of a larger context. This difference is probably decidedly less than would have been predicted by most persons, and there is, of course, reason in ordinary cases to believe that out of the whole series of instances in which one's memory is at fault concerning a name, date or the like, recognition would unhesitatingly take place in a much larger majority of cases than this were the number or term actually furnished to its seeker. But these are cases in which the whole system of connections which the name has had in our experience is well defined and persistent, only for the time being it is dormant. Like a trigger which hangs fire, the associate linking the present thought with the desired context fails to complete the connection. But this inward resistance once broken down, we *know* that the mind would be flooded with a wave of instant recognition and appropriation.

Under the conditions here in question, on the contrary, the terms to be recalled or recognized have no such mooring in the mind. They are presented under conditions of time and association which, except in accidental cases, allow no fixed connections to be formed. The general character of the processes involved, as well as the quantitative value of the difference presented by recall and recognition under the conditions obtaining during the present experiment, indicates a dependence upon other determinants than those which differentiate these functions in their relation to well-known terms which have been forgotten. Instead of persistent connections which have for the present been blocked, it is probable that here the quantitative difference between recognition and recall is related to phases of waning in a system of after-effects of the original impression which has had a continuous existence during the intervening period, but is on the way to an early extinction from which subsequent revival will be impossible. A certain violence or duration in an impression appears necessary in order that any permanent record of it shall be made in memory. Of the multitude of faint and evanescent stimuli which do not leave any such persistent trace it is to be observed, as various writers have pointed out, that if attention be not turned to their character until after the stimulus has been removed, it is still possible during a subsequent period, which is, indeed, commonly very short, to catch their echo, as it were, still reverberating in consciousness; but that if a greater delay occur before the attempt is made the form of the impression will be found to have been lost beyond recall.

The indications are that in the investigation here reported the results are dependent upon the stages of fading presented by an elementary memory of this sort. In its relation to the content repro-

duced in the process of recall the original material comprises three classes of data—first, words correctly reported; second, those not recalled at all; and third, words not correctly reproduced but represented by substitutes resembling those originally given, as 'sot' for 'sit,' 'fad' for 'pad,' 'hug' for 'mug,' and the like. The proportion of such errors nearly equals the difference between the percentages of words correctly reproduced through voluntary recall and words recognized upon re-presentation. The fact that the total number of words set down, including both perfect and approximate reproduction, thus roughly equals the proportion which the observer is able to identify amid a larger group suggests the inference that of the whole series of impressions received under the given conditions —some 25 per cent.—are already 'dead,' in the sense that they can neither be voluntarily reproduced, nor even identified upon re-presentation, while of the remainder a certain proportion, though beyond the reach of direct associative recall, are still 'viable,' capable of arousing the supplementary processes of recognition on the renewal of the sensory impression. If this be so, the proportion of words correctly and incorrectly recalled and of those recognized would be a function of the temporal phase presented at the moment by these disappearing after-effects, and not a true phenomenon of memory. It would, therefore, be impossible to apply the results, without verification, to subsequent processes of reproduction proper in their relation to recognition. There remains the question of the period during which the excitability due to the original impression persists in such cases. The rapid initial decline in the memory content described in the classic investigations of Ebbinghaus is perhaps a reflection of this process of fading, and in its curve indicates its temporal progress. As the bulk of recorded experiments on memory and association depend upon reports made within the probable limits of this dissolution process, it is to be considered whether the formulæ which they have afforded—the laws of recency and primacy, for example—do not need revision before they can safely be applied to the more permanent content of associative memory.

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DEFINITIONS OF INTENSITY

IN this paper I investigate the meaning of intensity (intensive quantity or magnitude) as a scientific category; that is, intensity as used in psychology and physical sciences. Most of the definitions hitherto given seem obscure, even contradictory. For instance, one authority says intensities are in no sense measurable; another that

they are in principle measurable. When authorities can thus differ in interpreting this term, it must be that we have not yet brought to light its essential nature. I therefore undertake another analysis of the term in the hope of suggesting what this essential nature is.

In some subjects it is enough to build up a definition deductively; thus, we define cardinal numbers by combining the concepts class and one-to-one correspondence. This method seems to hold good in a so-called ideal realm like that of mathematics. But there are regions in which a definition will be of little use unless it be also to some extent obtained by analysis of given facts. The category of intensity, we shall see, belongs to such a region. For example, a conceptual or mathematical definition of intensity like the following,[1] intensity implies greater, less or equal, but without the whole-part relation, must be regarded as insufficient, even though correct; for we can not easily tell what facts are intrinsically incapable of such relation. As to whether sensations are in any sense wholes, the point is in dispute. Velocities and temperatures seem to be *treated* as though they were capable of division, even if we call them intensive. So purely conceptual a definition as the above is, therefore, not easily applied to the facts. Is there not some mark by which we can tell what kind of a fact will have these properties, and what kind will not? Such a mark, if it exists, must be discovered by analysis of the facts in question. In a purely mathematical realm, the definition given above would suffice, but intensity is used in applied science, and unless its characteristics can be detected in facts by a simple inspection, our definition has not told us all that it should. We must then not only state the general characteristics of intensity, but also by analysis of facts ascertain that property which makes them have these characteristics. The task of defining intensity then falls into parts: first, enumeration of the characteristics, telling us the general nature of our subject-matter, and second, study of the facts in question, telling us the real essence of intensity which gives rise to the above characteristics.

The present paper will try to bring out the general characteristics of intensity; to this end we shall consider briefly some of the recent definitions.

The facts called intensive are of two kinds, psychical and physical. Examples of the former are, intensities of sensations, of images, of pleasure and pain, of affective states; of the latter, velocity, force, electric potential. As these facts seem to differ so widely, it is certainly not easy to pick out the properties, on account of which we label them all by the one name, intensity. Accordingly we find that the definitions given by psychologists differ more or less from

[1] Substantially that of Mr. Russell, 'Principles of Math,' Vol. I., pp. 182–3.

those of physicists, and also that the former do not all agree with one another. I give now some of these definitions in order that we may see where the obscurity and contradiction lie.

Every definition I have seen admits that intensities have the property of being greater, less or equal. Now for the points of difference.

The Century Dictionary gives a definition covering both fields. An intensity is a kind of quantity apprehended all at once, not by a successive synthesis; its parts are not separately identifiable. Professor Külpe[2] gives a psychological definition: an intensity has no parts; a louder tone-sensation does not contain softer ones, but is just one sensation, different from any softer one. The Dictionary of Philosophy and Psychology says that 'Intensive Quantity' does contain parts, although we can not distinguish them; the parts must really be there if it is to be a kind of quantity at all. In other words, there is no empirical evidence of parts, but we can not help believing that there are parts. Also under the heading 'Intensity' (which must mean intensive quantity since we are told intensity is a kind of quantity) we are told there is no whole-part relation. Now this seems a contradiction. And certainly the above conflicts with the view of Professor Külpe, and also with that of Professor Münsterberg[3] that sensations are not complexes of parts nor even measurable. I may add also the view of Mr. Bradley,[4] that psychical intensities are in principle quite measurable.

Here is a conflict of psychological views, then. Do greater and less imply that there are parts or not? Obviously we need to know what sort of greatness or smallness is in question. This ambiguity is revealed by the words of Mr. Stout,[5] who says that intensive magnitudes have, properly speaking, no mathematical difference, though there is something analogous to mathematical difference. That is what causes the difficulty in defining intensity: we need to know how far the analogy reaches. Does intensive quantity reduce, after all, to extensive quantity? This is the problem raised by the psychological definitions. Can there be a kind of quantity which is logically incapable of addition or division, or other properties usually associated with measurement? And if we can without contradiction define such a kind, do we have a case of it in sensations, images, etc.? We shall now find the same problem confronting us in the field of physical intensities.

Here Professor Ostwald[6] has given the most careful definitions.

[2] 'Grundriss der Psychologie,' p. 47.
[3] 'Grundzüge der Psychologie,' Vol. I., p. 263.
[4] *Mind*, N. S., 4, 1.
[5] 'Manual of Psychology,' p. 206.
[6] 'Naturphilosophie,' Lecture IX.

He uses the term *stärke* to denote intensity, and mentions two distinctions between *stärken* and extensive quantities: (1) *stärken* can not be superposed, while extensive quantities can, and (2) they can not be added. As to the first: you can not superpose one sensation on another, for it is a distinct individual event in time. You can, however, superpose one body on another; bodies therefore have extensive quantity, sensations are *stärken*. You can not superpose one interval of time on another, for then it would lose its temporal individuality; therefore time is a *stärke*. As to the second: you can not bring together two moving bodies and get twice the velocity by combining them. You can not join two bodies of equal temperature and get double that temperature. Therefore velocity and temperature are *stärken*.

Now addition is a condition of such measurement as we apply to extensive quantities, and superposition seems to be at least a criterion of our ability to measure such quantities. Where these are impossible, then, it would seem that measurement, of the kind applied to bodies in space, is in principle impossible. And yet the *stärken* undoubtedly have quantity, and are measured. But if they can not be added (and of course, consequently, have no whole-part relations) how can they be measured, and how can they be quantities at all? In short, we have the same problem as above: can there be a kind of quantity (for quantity it must be since it is measured) which is logically incapable of addition or division?

The special problem in defining intensity is, then: How can there be quantity without the whole-part relation? Or: how can there be measurability without addition? For physical and psychical intensities are certainly measured—the former more, the latter less accurately. Fortunately the recent development of the theory of order enables us easily to answer this question, and thus to solve the first part of our problem by enumerating the properties of intensity. We know now that it is possible to define a series each member of which may be greater than the one before it, such even that the difference between two next members is always the same, but that there will be no addition and no whole-part relation between any two members unless you assume the commutative and associative laws.[7] Intensities might be ordered in such a series, at equal distances apart (*e. g.*, as in the just perceptible differences of Weber's law) and a kind of measurement which would correlate them to the number-series is then perfectly possible. Only we must remember that the larger ones are not n times the smaller ones in the sense that they contain them.

[7] Cf. Russell, 'Principles of Mathematics,' Vol. I., Ch. XXI., especially p. 183.

Thus by considering the properties stated in the definitions of intensity we find it possible to frame a conceptual definition which seems to resolve their conflicts: intensities are characterized by greater, less or equal, and by absence of the whole-part relation, because they are describable in terms of order only. This confirms the above definitions except where they conflict with one another; it tells how far Mr. Stout's 'analogy to mathematical difference' can be carried, namely, up to the commutative and associative laws, but not including them. And it by no means reduces to extensive quantity, since it is a case of order.

As was stated at the outset, if we were giving a mathematical definition our work would be accomplished. But we are dealing with a category whose presence we wish to verify in experience, and our interest is more than conceptual. The above definition does not enable us to tell what facts are intensive with any great certainty. For are we sure that there is not a whole-part relation in some of these facts? Psychical states are often complex, apparently. Time, velocity, temperatures,—can they not in some sense be added? If time is a *stärke* as Professor Ostwald says, how comes it that a day seems to *contain* 24 hours? Does not a temperature of 90° include one of 50°? The difficulties of adding velocities and temperatures seem to be material ones, rather than logical ones, to a first inspection. If they are due to the nature of the facts and not to our defective methods (as Mr. Bradley seems to think, in the article above mentioned, is the case with sensations) can we not find some one criterion common to all these facts, which will show why in the nature of things no method could possibly turn them into extensive quantities? We know that anything spatial, except points, has extensive quantity, and perhaps it would not be going too far to say that *all* the extensive quantities of science are in the last analysis measured in spatial terms. Now is there not some equally simple criterion for intensive quantity? In short, we come now to the second part of our task. We must take up in turn the various facts called intensive, and ask what is that property in each one that makes possible the greater, less or equal relation but prevents addition and the whole-part relation.

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MEETING OF EXPERIMENTAL PSYCHOLOGISTS AT CORNELL UNIVERSITY

ON April 4 and 5 a number of directors of psychological laboratories and others immediately interested in experimental psychology met on the invitation of Professor Titchener at Cornell University, and in very informal sessions discussed a number of reports of experimental investigations. No formal organization with officers and constitution was undertaken, but the invitation of Professor Münsterberg to hold a similar meeting next year at the Harvard Laboratory was accepted, and it is expected that such meetings will be held regularly at the various psychological laboratories. The following papers were presented:

Experiments on Idiots: Professor E. C. SANFORD.

This was a report of tests of memory, attention, motor ability and discrimination as exhibited by a number of backward children. The difficulty of defining mental deficiency by any simple test was emphasized by the result that in certain respects children distinctly deficient showed very good standing in the elementary tests.

The Laboratory Investigation of Backward Children: Professor L. WITMER.

A report in detail of three cases which had been treated by a system of will-training, after examination at the Pennsylvania Laboratory. The report emphasized the value of such work as a means of collecting psychological facts.

Analysis of Movements made in Simple and Complex Reactions: Professor C. H. JUDD.

A report of results obtained at the Yale Laboratory by recording in full the movements made by the hand of a reactor during reaction experiments. The movement was shown to be in many cases very complex, thus making it clear that the time of a given reactor may vary greatly according as the mode of movement varies.

Shortest Reaction Values, and Sensory and Muscular Reactions: Professor L. WITMER.

A report of reaction experiments in which values as low as 50 sigmas appeared with a consistency too great to allow them to be eliminated as accidental. Also a criticism on the basis of given results of the theory of sensory and motor types of reaction.

The Simple Reaction as a Test of Mental Ability: Dr. C. N. WHIPPLE.

Such tests are wholly inadequate. This conclusion was supported by a critical examination of the work of earlier investigators where a different conclusion was reached.

The Psychological Term 'Observer': Professor C. E. SEASHORE.

In the absence of Professor Seashore the paper was read by Dr. J. W. Baird. It contained a discussion of the terms 'subject,' 'observer' and 'reactor,' insisting upon the desirability of a discriminating use of these terms. 'Observer' should be the general term for the person on whom an experiment is tried. 'Subject' should be used where this person is abnormal, and 'reactor' where some movement is required.

Eye Movements Studied by Photography, with Special Reference to the Mueller-Lyer, Poggendorff and Zoellner Figures: Professor C. H. JUDD.

A number of investigators at the Yale Laboratory are photographing the eyes during inspection of various illusions. The photographs are taken with an Edison kinetoscope camera. In connection with this work practice series with the various figures are being carried on, and photographs are taken to show the character of eye movements under natural conditions and after training. The closest possible relation exists between eye movements and the illusions in the figures studied.

An Apparatus for Investigating Torsion during Eye Movements, with some Results: Professor W. B. PILLSBURY.

A reading telescope was mounted so that its spider web could be made to coincide with some radial line of the iris. Torsion of the eye was thus measured as the eye moved from positions of primary and secondary fixation to points at the periphery. The measurements show no torsion during convergence. Other movements in which torsions appear seem to obey Donders' law rather than Listing's law.

Convergence and Accommodation in the Perception of Depth: Dr. J. W. BAIRD. Read by title.

Imitation of Tones, with and without Distraction: Professor C. H. JUDD.

Graphic records made on smoked paper directly from a phonograph diaphragm show the pitch of a tone sung by any subject. Such records were exhibited for tones repeated without distractions, and for other tones repeated in the presence of distractions. Distraction sometimes leads the subject to make an error in the direction opposite to the distracting tone.

Relative Legibility of the Small Letters: Dr. C. N. WHIPPLE.

Demonstration of apparatus together with some discussion of individual forms of letters.

Perimetry: Dr. J. W. BAIRD.

Hellpach's zone of complementary colors outside the zone of total color blindness at the periphery of the retina can be shown to be due to after images which are very much more marked at the periphery than in the center of the retina.

Influence of Closing Eyes on Attention Waves: Professor W. B. PILLSBURY. Read by title.

Fluctuations of Attention and Vasomotor Waves: C. E. GALLOWAY. Read by title.

Fluctuations of Attention: C. E. FERREE.

A series of experiments with visual stimuli of varying intensity and area. The results go to show that the fluctuations are not of central nervous origin, but are merely cases of retinal adaptation. Thus as the area grows large so that eye movements can not bring the light to an unadapted portion of the retina, fluctuation does not appear. Constant series of parallel variations go to show that fluctuation and retinal adaptation follow the same law.

A Study of Attention by the Method of Expression: H. C. STEVENS.

Plethysmograph and pneumograph curves were taken during various forms of visual, auditory and tactual attention. The pulse and respiration differ for the different types of attention, while the plethysmograph gives uniformly a negative curve for all forms of attention.

An Outline of an Experiment Investigating the Interrelations of Taste and Smell: MATILDE CASTRO (introduced by Professor J. R. ANGELL). Read by title.

Type vs. Instruction in Psychophysical Work: Professor E. B. TITCHENER. Read by title.

The 'Psychophysical Series' as a Training Experiment: Methods, Results and Computation: Professor E. B. TITCHENER. Read by title.

During the intervals between sessions the Cornell Laboratory was inspected under the guidance of Professors Titchener and Bentley. The last evening session was held in the Psychoeducational Laboratory. The equipment of this laboratory was examined under the guidance of Dr. Whipple, who also read a critical discussion of the A-Test, showing its inapplicability to school tests. Professor E. C. Sanford demonstrated a device for mixing gray and white disks, not by rotating the disks themselves, but by viewing them through a rapidly rotating prism. G. H. Sabine demonstrated a speed regulator for the von Frey Limen Gauge.

The papers were followed by full discussions which were very generally participated in by those in attendance. C. H. JUDD.

YALE UNIVERSITY.

REVIEWS AND ABSTRACTS OF LITERATURE

The Groundwork of Psychology. G. F. STOUT. New York City, Hinds & Noble, 1903. Pp. vii + 248.

To those already acquainted with Dr. Stout's *Manual of Psychology* his *Groundwork* can be described best in these words taken from the preface:—"The aim of this book is to present a general view of mental process and mental development which shall be comprehensive and yet not vague and sketchy. I have attempted to omit all matter which can be omitted without interfering with my main purpose. Thus I have passed by all questions of detail connected with the Psychology of the Special Senses. My endeavor has been to present only what is essential to insight into the constitution of our mental life as a whole.

"The work is a new one. It is not an abridgment of my *Manual of Psychology.* Even where the matter presented is substantially the same, the mode of presentation is different. The two books have no more in common than is inevitable in works on the same subject by the same person. In some respects the *Groundwork* is, in my own opinion, an improvement on the *Manual,* because, since the *Manual* was written, my own views on certain questions have become more clear and precise. One distinctive feature of the present work is the free use which it makes of material derived from observation of young children."

The admirer of the *Manual* will doubtless praise still more this later book. Its style is admirably clear and concise and its exposition exact, consistent and accurate. The book is devoted largely to the explanation of the different psychical processes, chiefly those of cognition. The present reviewer finds the chapters on Retentiveness, Association and Reproduction, and also those treating Ideal Revival and the Productive Aspect of Ideational Process, especially valuable. To Dr. Stout's own chapter on Emotion is added one on the Sources of the Tender Emotion by Mr. A. F. Shand.

It seems superfluous to enter upon a criticism of the different doctrines of the book, for two reasons. First, they are already in large part familiar to the reader of the *Manual,* and secondly, they cover a very wide and inclusive field, in the opinion of the reviewer, authoritatively and accurately. One question may be profitably raised, however. Is Dr. Stout's *Groundwork,* as was said by Professor Taylor of the *Manual,* 'on the whole far and away the best text-book of Psychology for teaching purposes'? Our answer is, That depends upon what you want to teach. If the subjective processes are to be studied, 'yes'; but if we want a book to put into the hands of the youthful beginner, the average Junior, for example, the course of which this book might be an outline would, in our opinion, bid fair to inhibit forever all interest in Psychology rather than to arouse it and make it permanent. The best elementary book must proceed from that side of Psychology which brings it into closest touch with Biology, the more familiar science, must concern itself with those manifestations of mind which are most easily observed and studied, and

must deal with mental problems most likely to afford practical information; for, after all, a permanent interest in mental phenomena and their problems is the most valuable result a beginner's course can attain. This need some of our American text-books have, on the whole, met far better than those of Europe.

However, for a second, or advanced, course in General Psychology we should hardly find a briefer, clearer or better text-book than the *Groundwork,* nor will the mature student find a better book to give him concisely an 'insight into the constitution of our mental life as a whole.'

WESTERN RESERVE UNIVERSITY. WALTER T. MARVIN.

The Definition of Will. F. H. BRADLEY. *Mind,* October, 1902, pp. 437–470; April, 1903, pp. 145–177; January, 1904, pp. 1–37.

In these three articles Mr. Bradley attempts to defend and explain more adequately his definition of will as, empirically considered, 'the self-realization of an idea with which the self is identified.' The definition is expressive of three main conditions: (1) the *self-realization* of an idea; (2) the self-realization of an *idea;* and (3) the identification of the self with the idea realized. The first condition is fulfilled only when there is an alteration of the 'here and now.' In this respect, volition differs from resolve and intention, since in these the alteration is directed upon that which is purely ideal. In discussing the second condition, Mr. Bradley launches vigorously against the view that there may be volition without idea, showing that such a view is based upon a misconception of the nature of an idea. What is meant (3) by the identification of the self with an idea is explained by a comparison of the not-self in theoretical and in practical consciousness. In the former, the not-self is simply an other than the felt self; in the latter, there is added to otherness the relation of opposition. In so far, then, as there is an idea of a change to be made in that which is thus opposed to the felt self, the idea of the change is identified with this self.

Thus far Mr. Bradley has assumed the truth of ideo-motor action. He now asks how it is that in volition the idea realizes itself. His answer to this is perhaps the most significant part of his papers. Desire and conation do not of themselves explain how any idea gains its reality. The bridge from inward to outward he finds in a "variety of special 'dispositions'" or tendencies. Given the special 'disposition' and the idea with which the self is identified, and a volition is the outcome. Will is no mysterious something standing over ideas and inexplicably deciding. Thus Mr. Bradley concludes that will is nothing 'original or ultimate or self-explanatory,' but is a result of that which is not volition. The ultimates would rather seem to be the 'dispositions' and the ideal contents, both being factors of the identifying self.

Mr. Bradley would not deny, it seems, that, even as thus analyzed into 'disposition' and idea-identified-with-self, Will is, nevertheless, a unique synthesis and by no means to be explained as mere sum of its conditions. He would only deny that it is a simple in the sense of being not a resultant of independently existing elements. He has made out a

strong argument for 'dispositions' or 'tendencies' as ultimate for psychological analysis. To be sure, the problem is thus only pushed a step further back, yet in that step considerable light has been thrown on the nature of Will, and several views now widely held have been discredited. Among other things, Mr. Bradley succeeds in disproving the assertion that there is a plurality of volitional types, that choice is coextensive with will, and that consent is its characteristic factor. His own definition is strongly substantiated, so far as an empirical proof may go.

H. A. OVERSTREET.

UNIVERSITY OF CALIFORNIA.

Untersuchungen über psychische Hemmung. III. Artikel. G. HEYMANS. *Zeitschrift für Psychologie und Physiologie der Sinnesorg.*, 34, 1, January, 1904, pp. 15–28.

In this article Professor Heymans extends his work on the measurements of inhibition to the investigation of the influence of an electric stimulation of the skin upon a simultaneous auditory impression. Two methods were used in demonstrating the inhibitory influence. The first was by measuring the period of audibility of the ticking of a watch of minimal strength (attention waves), the second was by determining the limen for sound by the direct method of minimal changes.

The first method showed that the periods of audibility progressively decreased with an increase in the current intensity. An attempt was made to apply the Müller form of the method of right and wrong cases to the results in an endeavor to determine the stimulus limen, but the attempt was a failure. There was apparently no direct relation between proportion of right cases and period of audibility. The direct measurement by minimal changes gave entirely satisfactory results. The limen changed from 25 to 94 with a change in current strength from 0 to 25. The values when plotted gave a straight line, with only insignificant directions of observed results.

The author overlooks the work of Breese and Taylor obtained by approximately his own first method. Taylor found, however, that there was quite as often a reinforcement as an inhibition, particularly with weak stimuli, and the reviewer has confirmed that result so frequently and with so many subjects in general laboratory work with students that it seems to him unlikely that all subjects would show the inhibitory effects that Heymans found for his two. It seems at least worth while to work over the field again with this point in mind, in spite of the consistency of the author's results.

W. B. PILLSBURY.

UNIVERSITY OF MICHIGAN.

JOURNALS AND NEW BOOKS

THE PHILOSOPHICAL REVIEW. March, 1904. Vol. XIII., No. 2. *The Eternal and the Practical (pp. 113–142)*: JOSIAH ROYCE. – This article discusses Pragmatism. The writer proves that the prag-

matist can not defend his own position except by a non-pragmatic reference to a standard of truth other than the satisfaction of his momentary need. This transubjective standard does not, however, involve an appeal to a world of realistic *objects,* which he rightly repudiates, but to other minds and ultimately to an Absolute. *Aristotle's Posterior Analytics: II. Induction* (*pp. 143–158*): JOHN WATSON. – "We may sum up Aristotle's view of induction somewhat as follows: (1) Induction comes to the aid of demonstration either by supplying the materials necessary for the demonstration of a 'fact' or by itself establishing the concomitance in a class of things of certain attributes. (2) No definition of an essential property . . . can be gained by induction. (3) Induction is . . . related to definition . . . and abstraction . . . but abstraction is prior to reflective thought, whereas induction is essentially reflective and proceeds by a definite method." *The Philosophical Work of Herbert Spencer* (*pp. 159–175*): JOHN DEWEY. – A sympathetic and discriminative appreciation of Spencer's life and work. He resembles Zola in that his work did not gradually develop but was the fulfillment of a preconceived plan; the style and tone of both writers is consequently peculiarly objective and lacking in personal warmth and color. Spencer moreover had quite unconsciously absorbed the individualism of the eighteenth century and expressed this attitude in nineteenth-century categories. His extraordinary influence is due to his original synthesis of the philosophic and the scientific aspects of the evolution doctrine. *Proceedings of the Third Annual Meeting of the American Philosophical Association* (*pp. 176–206*). – Reports of the Secretary and the Treasurer. Summaries of papers read at the meeting. *Reviews of Books* (*pp. 207–232*). – H. Cohen, *Logik der reinen Erkenntniss,* J. G. HIBBEN. C. Renouvier, *Le personnalisme,* ANNA A. CUTTER. C. A. Strong, *Why the Mind has a Body,* C. M. BAKEWELL. J. Royce, *Outlines of Psychology,* MARY W. CALKINS. Summaries of Articles. Notices of New Books. Notes.

REVUE PHILOSOPHIQUE. 29e Année. No. 3. March, 1904. *La Science Positive de la Morale* (*1er. Article*) (*pp. 225–241*): CANTECOR. – The new movement in ethics (Lévy-Bruhl, Curkheim, Bouglé, Simmel) has the faults of positivism; it knows no duties beyond present needs, it reveals no goal of human labor, and is unjust to our craving for the ideal. *Ascétisme et Mysticisme* (*pp. 242–262*): B. DE MONTMORAND. – These are two aspects of one attitude, the former being the preparatory stage, of emptying the soul—'psychological simplification'—the latter the filling of the soul from a divine source. Mysticism is not mere inaction, but the perceiving of energy in order to action. *Saint-Simon Père du Positivisme* (*fin*) (*pp. 263–287*): G. DUMAS. – Comparison of Saint-Simon and Comte reveals identity of system; Comte simply had the learning, energy and coherence of thought to found a school of thought—which Saint-Simon lacked. *Revue Critique: Les principes des Mathématiques d'après M. Russell* (*pp. 288–304*): G. MILHAUD. – After exposition of the work the following criticisms are made: Mr. Russell's deductive account of mathe-

matics and logic as the combination of ultimate logical constants is insufficient; such combination is owing to the stimulus of intuition. His definition of the irrational as a class of rational numbers is not essentially different from Dedekind's. Many of the earlier concepts presuppose the later, *e. g.*, one-to-one-correspondence, term, already include number which must be regarded as first given. *Analyses et Comptes Rendus:* F. Pillon, *L'Année Philosophique; 1902:* J. Delvaille. E. Lubac, *Esquisse d'un Système de Psychologie Rationelle:* L. Dugas. W. Jerusalem, *Einleitung in die Philosophie:* H. Daudin. A. Binet, *L'Étude Expérimentale de l'Intelligence:* B. Bourdon. Ch. Ribéry, *Essai de Classification Naturelle des Caractères:* P. Malapert. W. Gore, *The Imagination in Spinoza and Hume:* J. Philippe. C. Patrick, *Studies in Psychology:* J. Philippe. J. M. Baldwin, *Fragments in Philosophy and Science:* J. Philippe. W. Wundt, *Grundzüge der Physiologische Psychologie:* H. Piéron. Th. Dahmen, *Die Theorie des Schönen:* C. Lalo. W. G. Alexejeff, *Die Mathematik als Grundlage der Kritik Wissenschaftlichen Philosophischer Weltanschauung:* A. Rey. A. Bastian, *Das Logische Rechnen und seine Aufgaben:* L. C. *Revue des Périodiques Étrangers.*

REVUE DE PHILOSOPHIE. 4e Anné, No. 3. March, 1904. *Sur le Matérialisme Scientifique (pp. 261–283):* P. Vignon. – Materialistic Monism is unsatisfactory in that each atom is treated as a separate ultimate being, and the logical rules of the system are products of the mind which they are meant to explain (*à suivre*). *L'Abstraction Scolastique (pp. 284–298):* V. Bernies. – The scholastic 'intellectus agens' is an inconsistent concept, not useful to explain, not necessary or verifiable in consciousness. *L'Histoire du Droit et la Philosophie de M. Bergson (pp. 299–306):* C. Boucaud. – Duty should be viewed as a social product, from the dynamic, not the static and 'archeological' view, which deals in abstractions. *Un Épisode du 'Sophiste' (pp. 307–325):* Ch. Huit. – In this dialogue of Plato, Non-Being is elevated to the rank of Idea, which is contradictory to Plato's system and renders the dialogue suspect. *À Propos d'un Centenaire (pp. 326–333):* T. De Visan. – After giving some account of the life and personal habits of Kant, the author urges the study of Kant's earlier and lesser works as available for an understanding of the Critical Philosophy. *À Propos du 'Problème Morale' (pp. 334–338):* Abbé Gayraud. – In reply to G. Fonsegrive's paper in the last number it is argued that if God is *morally* anterior to our consciousness of duty, He must at the same time be *logically* anterior. *Réponse de M. Fonsegrive (pp. 229–340).* – The above criticism is based on a distinction between will and intellect which falsifies their nature, for each is but an abstraction. *Analyses et Comptes Rendus:* M. A. Dastre, *La Vie et la Mort:* Comte de Vorges. E. Gley, *Études de Psychologie Physiologique et Pathologique:* E. Baron. C. Gasca (editor), *Historia de la Filosofia del Siglo XIX, por A. G. Izquierdo:* J.-U. Poitevin. *Collection: Les Directeurs de Conscience:* E. B. *Collection Scientia: La Spécificité Cellulaire,* etc.: E. B. Bourneville, *Récherches Cliniques et*

Thérapeutiques sur l'Epilepsie, etc.: E. B. E. Mathias, *Le Point Critique des Corps Purs:* A. P. Sommaires des Revues. Bulletin de l'Enseignement Philosophique. IIe Congrès International de Philosophie. Nomination. Notice Necrologique.

REVUE DE METAPHYSIQUE ET DE MORALE. January, 1904. XII., 1. *La Morale de Renouvier (pp. 1–18):* A. Darlu. This 'lecture' begins by giving us first an account of the spirit of the doctrine of Renouvier. Ethics in themselves are an autonomous *science* of conscience; with R. they are strongly 'personalistic,' every duty being simply the reverse face of the right of some other person, and authority itself deriving its origin and power from the spontaneous determination of freedom. For M. R. justice is everything in morals, the sum total of right and the sum total of duty; love indeed or charity may be detrimental to justice. The ideal order being other than the concrete order, consequently justice must vary according to the conditions of the facts. In the order of social economy, justice can be obtained, not through a deadly authoritative settlement (state socialism), but by the gradual improvement of morals and by free association. In the political order, war must be condemned, but universal federation is unpractical. Renouvier's ethics, to sum them up in one word, are the ethics of justice and peace. *Les Principes des Mathématiques, I. Principes de la Logique (pp. 19–50):* L. Couturat. – Toward the second half of the nineteenth century, a union was effected between logic and mathematics, mathematics constituting as their base the science of multiplicities and the science of series, while logic became the logic of relations and endeavored to demonstrate the mathematical axioms. It has been, therefore, established that mathematics are based on nine undefinable notions and twenty undemonstrable principles, which are notions and principles of logic itself. Modern logic, therefore, thus enlarged and developed, has supplanted the ancient merely Aristotelian logic. Among the results it has achieved up to the present, we may mention that it has established the vice of four syllogistic modes (Darapti, Felapton, Bamalip, Fesapo), and discarded three errors: (1) The supposed identity of the three principles of identity, of contradiction and of the excluded middle, (2) the supposed sufficiency of those three to found the whole logic (several other principles having been proved to be necessary), (3) the doctrine that every form of reasoning is reducible to syllogism. *Le Devenir et l'Idéal Social, à propos d'une brochure récente (of Emm. Lévy) (pp. 51–56):* F. Rauh. – The author of the pamphlet tried to establish that a new right of property, the 'collective right' has been gradually asserting itself in recent social evolution. *La Démocratie devant la Science (pp. 57–73):* Bouglé. – Some have maintained that modern science condemns the democratic movement as contrary to the tendency of evolution. This charge may be answered in a twofold manner. First, by proving that those so-called laws are not conclusively established, and that, besides, they do not in fact contradict the democratic spirit. Secondly, as man is not merely a bodily organism, but at the same time a being endowed with a mode of

activity and life which is superior to the merely physical stage, he must therefore act on other principles than those of mere biology. The analysis of history will some day supply sociology with the moral prescriptions that must regulate human society, pure biology remaining a merely inferior science of physical organisms. At all events, the democratic movement will have to develop among the masses the conscience of individual life, but in proportion also the social spirit as its counterpoise. *Études Critiques. Sur la théorie géométrique du général de Tilly (pp. 74–87):* G. LÉCHALAS. – That geometry is analyzed as a geometry 'of numbers' independent from every spatial reality, a fresh proof that geometrical theorems are not bound necessarily with some external object. *Vers le positivisme absolu par l'Idéalisme par L. Weber (pp. 88–108):* E. CHARTIER. – Taking his departure from the idealistic Cartesian position, the author of this book concludes to the existence of the real as being the very research of the real. *Questions pratiques. L'Idée de Patrie (pp. 109–136):* A. FOUILLÉE. – Exclusive nationalism is at the same time a sociological error and an injustice. But the idea of 'fatherland' is rational in itself. Mankind, however, as an organic sociological whole is not yet, is 'in fieri,' as a rational ideal to be pursued. International solidarity must be superadded to the love of the 'patrie,' but must not destroy it. To deny the 'patrie' is the fact of chimerical minds. We must promote peace universal, but not at the cost of our own national existence; that is why, for the time being, general disarmament is practically impossible. *La Langue universelle (pp. 137–147):* A. LALANDE. – The creation of a universal artificial language, be it volapük or esperanto, is a possible and practicable undertaking, not as a substitute of national languages, but as an auxiliary international one. *Supplément. Notice nécrologique, H. Spencer. Livres nouveaux* (twenty volumes are analyzed). *Analyse des Revues, Thèses de Doctorat.*

March, 1904. No. 2. *Les Derniers Entretiens de Ch. Renouvier (pp. 149–185):* L. PRAT. – Renouvier's most cherished doctrines, as summarily dictated by him during the last four days of his life, are here reproduced verbatim, including: the refutation of the infinite, space, the self, personality, evil, the future of philosophy, pity, the future of democracy. *Ce que la Médecine Expérimentale doit à la Philosophie (pp. 186–210):* F. COLONNA D'ISTRIA. – Scientific medicine has been influenced decisively by the philosophy of Condillac, through his disciples Pinel, Cabanis, Bichat —especially Pinel. *Les Principes des Mathématiques (pp. 211–240):* L. COUTURAT. – Cardinal number is defined by abstraction without a vicious circle, and is presupposed by order, which is more complex. Tractions and negative numbers are generalized not from numbers (which are integers), but from relations between numbers. *La Raison et les Antinomies, 3^e. article (pp. 241–258):* F. EVELLIN. – As regards the third antinomy, only prejudice prevents our reconciling spontaneity and necessity. Law is the manifestation of will and implies apparent occasional deviation. The necessity-world is an abstraction. *Discussions: De 'devoir-faire' et le 'Devoir' (pp. 259–269):* A. FOUILLÉE. – The 'devoir-faire' doctrine does not imply necessarily a categorical imperative, but

the seeking of any end, categorical or hypothetical; it is therefore vague. *Étude Critique: L'Idée de Patrie (pp. 270–278):* P. LACOMBE. – Patriotism is not to be condemned, as many seem to think to-day, but is a natural stage in expansion of sympathy from family to all humanity. Even when our country is wrong we should assume its faults. It should not, however, control freedom of thought. *Supplement:* 2e Congrès Internationale de Philosophie. New Books, Reviews and Periodicals. Doctoral Theses.

ZEITSCHRIFT FÜR PHILOSOPHIE UND PHILOSOPHISCHE KRITIK. Band 123, Heft 2. *Darstellung und Kritik von J. St. Mill's Theorie der inductiven Methode, Schluss (pp. 121–151):* H. REICHEL. – An inductive method is a contradictio in adjecto. Mill's method is based on a vicious circle. Of all philosophy Aristotle remains the old, Kant the new testament. *Religion und Entwickelung, Schluss (pp. 151–162):* H. SIEBECK. – In the highest stage of evolution, the spiritual, characterized by freedom, the distinction between evil and bad is of fundamental importance for the religious consciousness. Evil opposes life, and is necessary; the bad is a possible consequence of freedom. *Parallelismus oder Wechselwirkung? Schluss (pp. 162–171):* F. PAULSEN. – That parallelism is artificial is no objection to it. Its basis is the conservation of energy, which rests on the belief in the unity of reality itself. Professor Strong is hailed with joy as an ally. *Erkenntnistheorie des primitiven Denkens (pp. 172–186):* P. BECK. – Primitive man treats his illusions as uncontrollable realities. Ghosts, gases and shadows have for him the same kind of reality. So Plato, in denying that ideas are corporeal, meant only that they are not solid or liquid. Undoubtedly he thought them extended. (Conclusion follows.) *Der Wert der Wahrheit (pp. 186–206):* G. v. GLASENAPP. – The moral basis of science is the demand for uniformity therein. The value of truth for its own sake is that it reveals to us the unity of all things, and unites us with God. (Conclusion follows.) *Zur neuesten Litteratur der Philosophie in Ungarn:* Dr. Szlávik. *Critical Notices,* by Ziehen and others. – Th. Ribot, *Essai sur l'imagination créatrice.* W. Wundt, *Einleitung in die Philosophie.* Überweg-Heinze, *Grundriss der Geschichte der Philosophie, Dritter u. Vierter Teil.* E. Kuhnemann, *Grundlehren der Philosophie.* G. Ratzenhofer, *Postive Ethik.* J. B. Stallo, *Die Begriffe und Theorien der modernen Physik,* etc.

ANNALEN DER NATURPHILOSOPHIE. January, 1904. Band III., Heft 2. *Gedanken über Begriffsbildung und einige Grundbegriffe (pp. 125–202):* O. BÜTSCHLI. – There are no genuine concepts for single things. Judgments are based on the lack of any sense of difference or contrast between things and a concept, or between concepts. In mathematics the certainty of the judgments rests on the simplicity of the data. Cause and effect properly express merely the general fact of continuous succession. The scientist rightly seeks to reduce all succession to that of motion. Force is a wrongly formed concept. Purpose resides, not, *e. g.,* in the seed or in its environment, but always in a third and con-

scious person. It is introduced to explain sudden changes, and is dispensed with when, back of the apparent suddenness, there is found a gradual change. The ego and the non-ego are distinguished, just as red and blue are, by feelings. So there is a time feeling and a space feeling. *Anhang I.* The concept energy is of value in dispensing with the idea of continually operative forces; energy is not substantive. *Anhang II.* Time and space are empirical concepts. *Die Erkenntniss des Transzendenten (pp. 203–233):* F. Bon. – Epistemologists overlook the distinction between the truth of, and the evidence for judgments; they err also in seeking the answer to this problem in states of consciousness. It is a question of truth, and to put the question, therefore, assumes the knowledge. *Ein Beitrag zur Definition von Genie und Talent (pp. 233–237):* V. Fischer. – In terms of the factors of spiritual energy, talent grasps lightly, genius deeply; talent proceeds from great capacity, genius from increased intensity. *Critical Notices,* by W. O. – P. J. Mobius, *Ausgewählte Werke.* L. Keller, *J. G. Herder und die Kultgesellschaften des Humanismus.* F. Gottl, *Die Grenzen der Geschichte.*

ARCHIV FÜR SYSTEMATISCHE PHILOSOPHIE. February, 1904. Band X, Heft 1. *Auf wem ruht Kants Geist? (pp. 1–19):* E. Adickes. – Every philosophical system is the special expression of a personality. Who would understand Kant must be his historian, not his student. Kant's spirit rests on no one; nor can any one say what Kant to-day would teach. *Anschauung und Beschreibung (pp. 20–65):* M. Dessoir. – Sensuous representations are never the proper content of word presentations; *e. g.,* Heine makes a 'corpse-like odor' proceed from a plant, but no hallucination of smell is needed that the mind be excited as intended. Speech is not a continuation of the worlds of sight and hearing, but is a world for itself. *Der Stoff vom philosophischen Standpunkte (pp. 66–97):* J. N. Szuman. – The reality of all physical properties is that bodies act on each other. Duration and extension are grades of intensity of this activity. This theory is in harmony with that of Boscowich. *Bericht über deutsche Schriften zur Logik in den Jahren 1895–99. Fünfter Artikel (pp. 101–126):* E. Husserl. – This article is given to a discussion of Anton Marty's 'Uber subjectlose Sätze und das Verhältniss der Grammatik zur Logik und Psychologie.'

KANTSTUDIEN. January, 1904. Band VIII, Heft 4. *Die Grundlagen der Geometrie nach Kant (pp. 345–395):* W. Reinecke. – In his doctrine of space and time Kant did not have in mind that physical experience which lay nearest him on account of his astronomical studies. He did not discriminate sharply enough between particular perceptions and the totality of nature. The purely formal foundations of geometry have objective validity because of their basis in time, not in space. *Die Erkenntnisproblem und Machs 'Analyse der Empfindungen' (pp. 396–447):* E. Lucka. – Mach's fundamental error is to assume that experience is a concept ready to hand, needing no discussion. He also completely misunderstands the problem of substance; he confuses it with that of the thing-in-itself. *Kant in Holland (pp. 448–466):* van der Wyck. – An

account of many followers of Kant in Holland. *Konjecturen zu Kants Kritik der Praktischen Vernunft (pp. 467–471):* E. WILLE. Critical notices: O. Liebmann, *Gedanken und Thatsachen,* F. MEDICUS. B. Bauch, *Glückseligkeit und Persönlichkeit in der kritischen Ethik,* H. VAIHINGER.

February, 1904. Band XI, Heft 1 and 2. *Kant. Zur Erinnerung an den 12. Februar 1804 (pp. 1–3):* O. LIEBMANN. – A poem. *Nach Hundert Jahren (pp. 5–20):* W. WINDELBAND. – During the past century the greatest service of the critical philosophy has been the preservation of the spiritual content of human history. And its present task is to complete that service through a philosophy of religion. *Das Historische in Kants Religionsphilosophie (pp. 21–154):* E. TROELTSCH. – The place of history Kant sums up in the phrase, 'History serves only for illustration, not for demonstration.' His meaning, however, has never thoroughly been understood, owing to his diplomacy and compromise. In fact, Kant built the bridge between the Catholic and primitive Christian position and that of the modern world. *Immanuel Kants philosophisches Vermächtnis (pp. 155–195):* F. HEMAN. – The causes for the early departure of his successors from Kant's position and the weaknesses of the Kantian revival are traced in detail. Some of Kant's latest words and writings are discussed. *Die Persönlichkeit Kants (pp. 196–211):* B. BAUCH. *Kants Bedeutung für die Pädagogik der Gegenwart (pp. 211–245):* F. STAUDINGER. – The formalism of the Herbartians stands to-day in need of the lessons of the critical philosophy. *Herder und Kant (pp. 246–260):* E. KUHNEMANN. – Kant freed man's intellect without depriving him of a vital belief in God. It is this problem of the nature of God that separates Kant and Herder. *Helmholtz in seinem Verhältnis zu Kant (pp. 261–285):* A. RIEHL. *Zum hundert jährigen Todestage Kants (pp. 286–291):* F. PAULSEN. *Emerson und Kant (pp. 292–306):* G. RUNZE – Emerson's poetic insight brought him nearer to Kant than were those philosophies through which alone he actually came in contact with the Kantian school. *Kant im Spiegel seiner Briefe (pp. 307–320):* F. A. SCHMID. – Kant's amiable and social character is compared with his comparative isolation from the best in the life of his day. *Die Neue Kant-Ausgabe und ihr erster Band (pp. 321–341):* E. v. ASTER. *An die Freunde der Kantischen Philosophie:* H. VAIHINGER.

ZEITSCHRIFT FÜR PSYCHOLOGIE UND PHYSIOLOGIE DER SINNESORGANE. Jan.–Feb., 1904. Bd. XXXIV., Hft. 1–2. *Untersuchungen über die Herabsetzung der Sehschärfe durch Blendung (pp. 1–14):* A. BORSCHKE. – Small, just noticeable differences of brightness disappear upon the entrance of a brighter light into any part of the retinal field. The author studies the degree of this 'Blendung' effect in different individuals; he finds marked differences, but attributes them rather to differences in sense discrimination than to differences in 'Blendung.' *Untersuchungen über psychische Hemmung. V. Die Verdrängung von Schallempfindungen durch elektrische Hautempfind-*

ungen (pp. 15–28): G. HEYMANS. – The ticking of a watch which could be heard almost uninterruptedly in the absence of disturbing sensations was rendered unnoticeable more than half of the time by a faradic current applied to the skin; the stronger the current, the higher was the auditory threshold raised. *Über Farbenkenntnis bei Schulkindern (pp. 29–47):* M. LOBSIEN. – Red was named correctly by all children from the age of 8 up; blue almost as well; yellow and green not quite so well in the earlier years; orange, indigo and violet were seldom so named, and often unnamed, up to the age of 13. Red was usually preferred to any other color with which it was shown. Blue and green were also favorite colors; orange and yellow were usually rejected in comparison with other colors. No especial changes appeared at puberty; no indication of 'color types' was obtained. *Leib und Seele-Eine Auseinandersetzung mit Professor Stumpf (pp. 48–51):* C. A. STRONG. – Starting from the premises of panpsychism—causal relations between psychic beings, evolution fundamentally a psychical process—one can explain the riddle of panpsychism, *i. e.,* why reality appears in the dual aspect of psychical and physical. This double appearance is made necessary by the struggle for existence within the psychical world, resulting in the development of the power of perception. *Literaturbericht (pp. 52–80). Das Geschmackvolle als Besonderheit des Schönen und speziell seine Beziehungen zum sinnlichen Geschmack (pp. 81–110):* G. M. GIESSLER. – The tasteful differs from other forms of the beautiful in that (1) it includes only what is pleasing, (2) it is, in any instance, composed of many elements, none of which is distinctly subordinated to the rest, (3) it includes scarcely any reference to human interests, scarcely any personal emotion. Esthetic taste is closely analogous to sensible taste; it is an idealized representation of pleasing bodily states. *Über die Abhängigkeit der Pupillarreaktion von Ort und Ausdehnung der gereizten Wetzhantfläche (pp. 111–131):* G. ABELSDORFF and H. FEILCHENFELD. – With increase in the area of the retina stimulated goes a corresponding (arithmetical) increase in the sensitivity of the pupillary reflex. The sensitivity decreases toward the periphery of the retina, but less in the dark- than in the light-adapted eye. The reflex that occurs in stimulation of the periphery can not be due exclusively to simultaneous stimulation of the fovea. A monocular stimulation causes less narrowing of the pupil than a binocular. *Das Leuchtturmphänomen und die Scheinbare Form des Himmelsgewölbes (pp. 132–140):* F. BERNSTEIN. – The pencil of rays thrown horizontally by a lighthouse appears curved in a definite way, to an observer located below the lighthouse. This affords a means of studying the apparent form of the heavens. *Literaturbericht (pp. 141–160).*

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Johnson, William H. *The Free-Will Problem in Modern Thought.* Columbia University, Contributions to Philosophy, Psychology, and Education, x, 2. New York: The Macmillan Co. 1903. 94 pp. 75c.

Luckey, G. W. A. *The Professional Training of Secondary Teachers in the United States.* Columbia University Contributions to Philosophy, Psychology, and Education, XII, 1–4. New York: The Macmillan Co. 1903. 392 pp. $2.00.

Shaler, Nathaniel S. *The Neighbor, the Natural History of Human Contacts.* Boston and New York: Houghton, Mifflin & Co. 1904. 12mo. x + 342 pp. $1.40 net.

Thorndike, E. L. *Heredity, Correlations and Sex Differences in School Abilities.* Columbia University Contributions to Philosophy, Psychology, and Education, XI, 2. New York: The Macmillan Co. 1903. 50c.

Willoughby, Westel W. *The Political Theories of the Ancient World.* New York: Longmans, Green & Co., 1904. 8vo. 302 pp. $2.00.

NOTES AND NEWS

THE Oxford convocation has passed a decree accepting with gratitude a donation by Pandit Shyámaji Krishnavarmá, M.A., of Balliol College, for the establishment of an endowment in memory of the late Herbert Spencer, the endowment to take the form of an annual lecture, with a provision that a 'Herbert Spencer' prize may, if desired, with the consent of the founder during his lifetime, be substituted for the lecture.

OWEN'S COLLEGE, Manchester, has received about $1,500 to establish a lectureship as a memorial to the late Professor Adamson, who was for many years professor of philosophy at the college.

PRINCIPAL C. LLOYD MORGAN, of University College, Bristol, has been offered the honorary degree of LL.D. by the University of Wisconsin, but has been unable to accept the honor because he can not attend the ceremonies connected with the celebration of the fiftieth anniversary on June 9.

THE announcement of several new appointments in the department of philosophy and psychology, at Johns Hopkins University has been made: Lecturer in Experimental Psychology (1904–5), Professor E. W. Scripture, of Yale University and the Carnegie Institution; Lecturer in Optics and Logic, C. Ladd Franklin, Baltimore; Lecturer in Physiological Psychology, Clarence B. Farrar, M.D., of the Sheppard Hospital.

YALE UNIVERSITY has issued a syllabus of Silliman Lectures for 1904. There are to be ten lectures on the general subject 'Integrative Action by the Nervous System,' by Professor Charles S. Sherrington, M.D., LL.D., F.R.S., of the University of Liverpool.

PROFESSOR GEORGE TRUMBULL LADD completed, on April 19, a course of five lectures at Columbia University, on 'The Psychology of Religious Experience.' On Monday evening, April 18, he met the Psychological Journal Club for a general discussion of the subjects of his lectures.